

UNITED STATES MARINE CORPS
Logistics Operations School
Marine Corps Combat Service Support Schools
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MTCC 4402

STUDENT OUTLINE

CARGO LOADING

LEARNING OBJECTIVES

1. Terminal Learning Objective: Given the requirement to execute vehicluar movements, commander's guidance, and the references, conduct convoy operations, to ensure movement of assets to the specific destination is within the commander's established time schedules. (0402.04.05)

2. Enabling Learning Objectives:

a. Provided with a requirement to move motor transport vehicles, required tools and equipment, and the reference, identify proper loading practices, per the reference. (35xx.03.09ap)

b. Provided with a requirement to move motor transport vehicles, required tools and equipment, and the reference, identify equipment characteristics, per the references. (35xx.03.09aq)

c. Provided with a requirement to move motor transport vehicles, required tools and equipment, and the reference, identify how loads should be secured to equipment, per the reference. (35xx.03.09ar)

d. Provided with a requirement to move motor transport vehicles, required tools and equipment, and the reference, identify how to move oversize equipment, per the reference. (35xx.03.09as)

e. Provided with a requirement to move motor transport vehicles, required tools and equipment, and the reference, identify equipment operator responsibilities, per the references. (35xx.03.09at)

OUTLINE

1. PROPER VEHICLE LOADING PRACTICES

a. By design standards, a vehicle has a given cargo area measured in cubic feet. This is governed by the width, length, and height of the cargo bed of the vehicle and a given payload and weight capacity. A perfect cargo load would be one with the exact cubic measurement and weight in pounds. However, these conditions are seldom, if ever, met.

b. The cargo's weight, bulk, and shape, the condition of the road, the terrain features, and the weather all affect the payload.

(1) Weight

(a) With dense cargo like ammunition, the vehicle's weight limit may be reached before the cargo space is filled. Sometime the weight is not stenciled on the cargo. In this case, scales, if available, are used to weigh the cargo. If scales are not available, the driver must estimate the cargo weight.

(b) When there is doubt about the vehicle's capability to transport a particular load safely, the driver's estimate should govern. He is the expert regardless of his rank and is responsible for proper loading.

(2) Bulk. Cargo such as pillows and clothing will completely fill the truck's cargo area before the payload capacity shown on the vehicle's data plate is reached.

(3) Shape. Cargo comes in many shapes: square, rectangular, and round, and all are shipped by motor vehicles one time or another.

(4) Road conditions.

(a) In some cases, the payload capacity of the vehicle can be too high for the existing roads. A poorly surfaced highway or unimproved road net may not let you carry maximum capacity loads.

(b) The nature of the road and the terrain affect the payload. The roads also affect the kind of commodity that can be transported, and the amount of blocking and bracing needed to secure the load.

(5) Terrain features. Terrain also affects the vehicle's cargo capacity. A vehicle may be rated for a 10,000 pound load on highways but, if the highway is a twisting torturous road in a mountainous area, reduced loads will be required. On the other hand, if a cross-country operation is conducted on a hard and dry salt flat, the normal cross-country load capacity can and should be increased.

(6) Weather conditions. Adverse weather has a direct bearing on vehicle operations. Snow, rain, sleet, and ice seriously affect vehicle handling, traction, and stopping. Under bad weather conditions, the load capacity of the vehicles will be limited. There are no set rules or guidelines governing this situation. Common sense and good judgment must be exercised.

2. EQUIPMENT CHARACTERISTICS

a. M923, Truck, Cargo

- (1) Maximum Payload 10,000 lbs on road
- (2) Bed Dimensions 7 ft x 14 ft

b. M813, Truck, Cargo

- (1) Maximum Payload 10,000 lbs on road
- (2) Bed Dimensions 7 ft x 14 ft

c. M998

- (1) Maximum Payload 2,500 lbs
- (2) Bed Dimensions 52 in x 84 in

d. M1123

- (1) Maximum Payload 4,400 lbs
- (2) Bed Dimensions 52 in x 84 in

e. M870

- (1) Maximum Payload 40 tons
- (2) Bed Dimensions 8 ft x 40 ft

f. MK48/14, Trailer, Powered, Container Hauler

- (1) Maximum Payload 45,000 lbs on road
- (2) Bed Dimensions 96 inches x 240 inches

3. CARGO SECURING PROCEDURES

a. To secure the load for safe delivery to its destination, the shipper must follow procedures to lash and/or block and brace cargo. The shipper is responsible for blocking and bracing a load. However, since the driver must deliver the load safely to its destination, some general rules apply:

(1) Block crates, boxes, and barrels to keep them from shifting en route.

(2) Use crib blocking whenever possible. It need not be nailed to the floor or sides if placed tightly against the cargo to reduce damage to the floor and sideboards of the vehicle.

(3) If a gap exists between pipes of lumber and the end of the railer, block the load with a gate constructed with 4- by 4-inch boards to prevent it from slipping.

(4) All lumber used for blocking must be free of knots and strong enough to provide a rigid and stable support for the load en route.

(5) When the load must be protected from the weather, pad the corners of boxes or crates to prevent damage to the tarpaulin.

4. OVERSIZE AND OVERWEIGHT LOADS

a. Civil authorities determine limitations on the weight and dimensions of vehicles using public highways. Consequently, restrictions vary considerably for shipments in the United States and in overseas areas. Unit personnel must know the applicable regulations for the movement control headquarters issues instructions for determining oversize and overweight loads. These limitations are established to prevent damage to MSR's and to allow for safe movement of vehicles.

b. Clearance Permit. The unit or activity planning to move oversize or overweight cargo requests a DD Form 1266. This form furnishes the ITO with complete information on the cargo and vehicles to be used. The ITO requests a special hauling permit from the authorities. The requesting unit must furnish the following information to the ITO or DMC:

(1) Type of equipment.

(2) Gross weight, axle loads, and spacing, height width, and length.

- (3) Origin and destination of movement.
- (4) Date and time of movement.
- (5) Nature of cargo (within security limitations).

c. Clearance Warnings. The sides and rear of oversize cargo must have adequate clearance lights or red flags to warn other traffic.

d. Escort Vehicles. When escort vehicles are required, they either must have warning lights or be driven with vehicle headlights on. When required, the lead vehicle carries a WIDE LOAD FOLLOWS sign on the front. The rear escort vehicle has a WIDE LOAD AHEAD sign on the back.

5. VEHICLE LOADING RESPONSIBILITIES. All operating personnel within a motor transport unit have a degree of responsibility toward vehicle loads and cargo loading. Their individual responsibilities are as follows:

a. The commanding officer is responsible for the unit's training. He must insure that all vehicle operators are thoroughly trained in the principles of loading and securing cargo on motor transport vehicles.

b. The truckmaster supervises and observes the loading and transporting of cargo by company vehicle operators. He recommends additional training to the commanding officer, as necessary.

c. The platoon leader is responsible for the training and proficiency of his operators. He keeps the commanding officer informed of the platoon's level of training.

d. Driver

(1) The shipper normally loads the cargo he is forwarding; however, the driver must insure that the cargo is properly loaded, secured against movement, protected from the weather, and safeguarded from pilferage.

(2) The driver is responsible for the cargo while it is on his vehicle.

(3) The driver will inspect all cargo to be loaded on his vehicle to make sure the weight does not exceed the vehicle's capacity.

(4) The driver is responsible for ensuring that the vehicle's hand brake is set and that wheel chocks are placed under the rear wheels to prevent any movement of the vehicle while loading operations are being carried out.

(5) The driver is responsible for his vehicle being loaded properly and should follow these rules:

(a) Place heavy supplies at the bottom of the load and distribute them evenly over the cargo floor.

(b) Place the load so that it will not shift; distribute the weight equally.

(c) Do not distribute the load loosely or build it up too high. High, loosely distributed loads cause swaying. This will make the vehicle difficult to handle and increase the danger of losing the cargo or overturning the vehicle.

(d) If the truck has an open body, put a tarpaulin over the cargo when practicable to protect against sun, dust, rain, and pilferage.

(e) If possible, place barrels and drums on their sides parallel with the length of the truck. Brace and pyramid them. If the possibility of leakage prohibits this placement, set the drums upright.

(f) Load sacked cargo separately or so it will not be punctured by odd-shaped items; stack it in overlapping layers to prevent shifting.

5. LOADING/TRANSPORTATION OF DANGEROUS MATERIALS

a. Rules the operator should follow when handling dangerous material.

(1) Make sure that the vehicle is safe to operate.

(2) Make sure that the vehicle is free from fire hazards:

(a) Check the vehicle's lighting and ignition for adequate insulation.

(b) Don't let oil or grease accumulate on the truck.

(c) Check the fuel system for leaks.

(d) Line the metal interior of the truck's cargo bed.

(3) Inspect the load and the vehicle regularly during the trip. Physically check the security of the load's tie down, blocking, and bracing. Check the vehicle's components for proper operation, and check for fuel, oil, and water leaks.

(4) Never leave the truck unattended.

(5) Don't let any unauthorized personnel hang around the vehicle.

(6) Make sure the hazardous/dangerous cargo packages are marked with the proper shipping name.

(7) Mark the front, sides, and rear of the vehicle with the appropriate placards.

(8) Check to be sure the shipper blocked and braced the load to prevent shifting.

(9) The operator should ensure that he has the following forms and records prior to transporting dangerous cargo:

(a) U. S. Government Motor Vehicle Operator's Identification Card, OF 346.

(b) Annual Medical Examiner's Certificate.

(c) Vehicle and Equipment Operational Record, NAVMC 10627.

(d) Motor Vehicle Inspection Report, DD Form 626. The DD Form 626 is a vehicle inspection form that lists the vital parts to be checked on a motor vehicle before it can be qualified as safe for transporting hazardous material.

(e) Special Instructions for Drivers, DD Form 836. The shipping organization originates the DD Form 836.

1 The driver's responsibility is to carefully read the information on the form and to be certain that all instructions are understood.

2 The driver will sign and carry the form while in transit.

3 In the case of an emergency, the driver shall use the appropriate information on the form as well as make it available to all assisting authorities.

(f) SF 91, Operator's Report of Motor Vehicle Accident.

(g) Motor Vehicle Driver's Handbook Ammunition, Explosives, and Hazardous Material, NAVSEA SW020-AF-ABK-010.

b. Handling and Transporting Ammunition. The following rules apply to the handling and transporting of ammunition:

(1) Tops of packages containing explosives must be marked "THIS SIDE UP."

(2) The load should be checked prior to departing.

(3) No smoking is allowed within 50 feet or open flames within 100 feet during loading or unloading operations.

(4) No smoking during the transportation of the cargo.

(5) The engine should be turned OFF during the loading and unloading operation, if applicable.

(6) Explosives should be handled with care and the vehicle should never be overloaded.

(7) The appropriate fire extinguisher must be carried and the operator should know how to use it.

(8) Make sure no part of the load is near the truck's exhaust.

(9) The tailgate should be closed and secured; allow no loading on the tailgate.

(10) The vehicle should not be driven past a fire on a highway without first ensuring it is safe to do so.

(11) Trucks carrying explosives should never be pushed or towed except to be moved off the road.

(12) Transporting detonating caps with other explosives is prohibited.

(13) Artillery shells should be laid on their sides with the sides of the projectiles parallel with the truck body, when they are not boxed or palletized.

(14) Congested areas and heavy traffic should be avoided.

(15) A safe following distance should always be maintained from other traffic and sudden stops or turns should be avoided.

c. Handling and Transporting Gasoline and Flammable Liquids.
The following rules apply to the handling and transporting of gasoline and flammable liquids.

(1) No smoking is allowed within 50 feet or open flames within 100 feet during the loading and unloading operations.

(2) No smoking during the transportation of the cargo.

(3) The engine should be turned OFF during the loading and unloading operation, if applicable.

(4) The appropriate fire extinguisher must be carried and the operator should know how to use them.

(5) Tarpaulins should be removed.

(6) Gasoline cans must be inspected for leaks. No one should be allowed to load defective cans.

(7) Gasoline cans will be tightly closed, whether they are full or empty.

(8) Electrical connections on petroleum semitrailers and filling apparatus should be properly grounded.

(9) Hobnail or metal-cleated boots should not be worn.

REFERENCES:

1. ***AETM, Applicable Equipment Technical Manuals***
2. ***FM 21-305, Manual for Wheeled Vehicle Operators***
3. ***FMFM 4-9, Motor Transport***
4. ***FM 55-30 Motor Transport Unit and Operations***